

STATE OF VERMONT
PUBLIC SERVICE BOARD

Amended Petition of Entergy Nuclear Vermont)
Yankee, LLC, and Entergy Nuclear Operations,)
Inc., for amendment of their certificate of public)
good and other approvals required under 30 V.S.A.)
§ 231(a) for authority to continue after March 21,)
2012, operation of the Vermont Yankee Nuclear)
Power Station, including the storage of spent)
nuclear fuel)

Docket No. 7862

SUMMARY OF PREFILED TESTIMONY OF RICHARD HEAPS

Mr. Heaps's testimony examines the potential impacts on Windham County and the state of Vermont of the VY Station's closure at the theoretical end of its current licensing case before the Vermont Public Service Board in 2013 (referred to as the "2013 SAFSTOR Scenario") as compared to the continued operation of the VY Station from March 2013 through March 2032 followed by prompt decommissioning (the "2032 Prompt Decommissioning Scenario"), or in the alternative, followed by SAFSTOR (the "2032 Deferred Decommissioning Scenario"). Mr. Heaps concludes that the continued operation of the VY Station from 2013 – 2032 will result in significant economic benefits for Windham County and the state and its residents, supporting satisfaction of the economic-benefit standard of 30 V.S.A. § 248(b)(4).

Mr. Heaps sponsors the following exhibits:

Exhibit EN-RWH-1	The Economic Impact of the VY Station on Windham County and Vermont
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Exhibit EN-RWH-2	Resume of Richard W. Heaps
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As explained in more detail in Entergy VY's Motion For A Declaratory Ruling Prescribing Scope Of Proceeding, filed on June 21, 2012, the Board's reliance on certain factors that may be considered under Sections 231(a) (which governs Entergy VY's amended petition) and 248(b) (which may be consulted only by analogy) is preempted or precluded by federal law, and therefore any discussion by Mr. Heaps of those factors is in the alternative to Entergy VY's primary position that the factors are preempted or precluded from the Board's consideration. Entergy expressly preserves its right to argue that those factors are preempted or precluded in connection with its June 21 motion and at other points in this proceeding and, if necessary, on appeal.

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PREFILED TESTIMONY OF RICHARD HEAPS

1 Q1. State your name and occupation.

2 A1. My name is Richard Heaps, and I am Vice-President of Northern Economic Consulting,
3 Inc., an economic consulting and analysis firm located in Westford, Vermont.

4 Q2. On whose behalf are you testifying?

5 A2. I am testifying on behalf of Entergy Nuclear Vermont Yankee, LLC, and Entergy
6 Nuclear Operations, Inc. (collectively referenced by me as "Entergy VY").

7 Q3. What is the purpose of your testimony?

8 A3. My testimony examines the potential economic impacts on Windham County and the
9 state of Vermont of the closure of the Vermont Yankee Nuclear Power Station (to which
10 I refer in my testimony as the "VY Station") at the assumed end of its current licensing
11 case before the Vermont Public Service Board in 2013 as compared to the continued
12 operation of the VY Station through March 2032.

13

1 Q4. Could you please summarize your conclusions?

2 A4. My analysis shows that the VY Station's continued operation through March 2032 will
3 result in a substantial economic benefit to Windham County and the state of Vermont in
4 terms of employment, total wages, disposable personal income and state and local
5 government revenues.¹ I compared the economic impacts of a shutdown in 2013
6 followed by decommissioning of the site using the SAFSTOR method (as described in
7 the reports of TLG Service, Inc. and testified to by Mr. Cloutier – the "TLG Report"
8 attached to the pre-filed testimony of Mr. Cloutier as Exhibit EN-TLG-2) with two
9 different scenarios assuming continued operation until March 2032. The first of the two
10 2032 scenarios is what I call the 2032 Prompt Decommissioning Scenario. This assumes
11 that the VY Station continues to operate until March 2032 and then promptly begins the
12 decommissioning process. Under this scenario, it is assumed that at the end of 2083, site
13 restoration is complete and no activity or structures associated with the VY station
14 remain. The second scenario is what I call the 2032 Deferred Decommissioning Scenario.
15 Under this scenario, it is assumed that the VY Station continues to operate until March
16 2032 and then uses SAFSTOR (again as described by Mr. Cloutier's report) to defer
17 decommissioning so that at the close of 2093, site restoration is complete and no
18 activities or structures associated with the VY Station remain. Throughout, I have relied
19 on the TLG Report for the timing and cost of different events under the several scenarios.

¹ Throughout my analysis, as I note in my response to Q 12, I assumed a 2011 VY Station payroll of about \$67.2 million a year. I now understand that a more accurate number is about \$65.7 million a year. I will revise my analysis using the \$65.7 million assumption, and make the revised analysis available on July 13. The difference will not affect my ultimate conclusions concerning the economic benefits of the continued operation of the VY Station, although the numerical results will change.

1 I estimate that the continued operation of the VY Station to 2032 in the 2032 Prompt
2 Decommissioning Scenario would yield the following economic benefits as compared to
3 the shutdown in 2013:

- 4 • There would be an average of 1,088 more employees in Windham County
5 and an average of 260 employees in the rest of Vermont from 2013 to
6 2031.
- 7 • All Windham County employers, including the VY Station, would have
8 \$2.136 billion more in payroll and employers elsewhere in Vermont would
9 have \$280 million more in payroll from 2012 through 2093.²
- 10 • Windham County residents would have \$1.612 billion more in disposable
11 income and residents elsewhere in Vermont would have \$393 million
12 more in disposable income from 2012 to 2093;
- 13 • The State of Vermont would gain a total of \$227 million more in general
14 tax revenues from 2012 to 2093;
- 15 • Windham County would have a population with about 400 more residents
16 from 2012 to 2031; and
- 17 • Local governments in Vermont would have \$67 million more in property
18 tax revenue from 2012 to 2093.

19 I estimate that the continued operation of the VY Station to 2032 in the Deferred
20 Decommissioning Scenario would yield the following economic benefits as compared to
21 shutdown in 2013:

- 22 • There would be an average of 1,088 more employees in Windham County
23 and an average of 260 more employees in the rest of Vermont from 2013
24 to 2031.
- 25 • All Windham County employers, including the VY Station, would have
26 \$2.120 billion more in payroll and employers elsewhere in Vermont would
27 have \$333 million more in payroll from 2012 through 2093.

² Unless otherwise indicated, the dollar amounts are expressed in constant 2011 dollars.

- Windham County residents would have \$1.6 billion more in disposable income and residents elsewhere in Vermont would have \$444 million more in disposable income from 2012 through 2093;
- The State of Vermont would gain a total of \$253 million more in general tax revenues from 2012 through 2093;
- Windham County would have a population with about 400 more residents from 2012 through 2031; and
- Local governments in Vermont would have \$74 million more in property tax revenue from 2012 through 2093 .

Q5. What did you consider in reaching those conclusions?

A5. In reaching our conclusion, I have considered the current economic condition of Vermont and Windham County, and I have examined the importance of the VY Station within those economies today. The results of our analysis are explained in greater detail in the report entitled "The Economic Impact of the VY Station on Windham County and Vermont," which I attach to my testimony as Exhibit EN-RWH-1. I will call this document the "Economic Impact Report." As a consequence, my testimony shows that a certificated project results in an economic benefit to the state and its residents as well as provides information relating to the economic benefits arising from continued operation.

Q6. Please describe your background and professional experience.

A6. I received a master's degree in economics from the University of Illinois in 1977. I continued my education at the University of Illinois, finishing all course work and examinations necessary for a doctorate by 1979. From 1980 through 1998, I taught economics at the University of Vermont, St. Michael's College, and Middlebury College. In 1985, I began Northern Economic Consulting with two other economists.

1 Since 1998, I have worked full time for Northern Economic Consulting. With Northern
2 Economic Consulting, I undertake a range of economic studies for private and public
3 clients. This includes economic- and fiscal-impact analyses of proposed projects for Act
4 250, economic-impact analyses of existing institutions for public relations and other
5 internal needs and economic-impact analysis of legislative proposals. Recent research
6 projects have examined issues such as Vermont's economic competitiveness, the impacts
7 of sales-tax differentials on Connecticut River border towns, the impact of slowing
8 population growth on Vermont's budgets and the impact of an electric-utility rate
9 increase on low-income residents. I also prepare business valuations and litigation
10 support in the area of forensic economics. In addition, my firm has published the
11 *Vermont Economy Newsletter* since 1991. This monthly newsletter examines issues such
12 as prospects for economic growth, job creation, income growth, the outlook for retail
13 sales, tourism, housing prices and trends in State government spending and revenue. I
14 write articles on a monthly basis examining these and similar economic developments
15 and trends in Vermont. My resume is provided in Exhibit EN-RWH-2. Also, each
16 January since 1992, the *Vermont Economy Newsletter* has hosted the Vermont Economic
17 Outlook Conference. This annual event provides an opportunity for area economists,
18 policymakers, business people and other interested Vermonters to explore Vermont's
19 economic outlook in relation to the national and global economic environment.

20 Q7. Have you testified previously before the Board?

21 A7. Yes. I submitted prefiled testimony and prefiled rebuttal testimony on behalf of the
22 Vermont Department of Public Service (or "Department") in Docket No. 6300, which

1 examined the proposed sale of the VY Station by the Vermont Yankee Nuclear Power
2 Corporation (or “VYNPC”) to AmerGen Energy Company, LLC (or “AmerGen”). My
3 testimony examined the economic impacts on Windham County and the state of Vermont
4 of the operation and eventual decommissioning of the VY Station under five scenarios
5 involving the continued operation of the VY Station by VYNPC, continued operation of
6 the VY Station by AmerGen under two scenarios, and shutdown of the VY Station in
7 2001 followed either by immediate decommissioning in 2001 or placement of the facility
8 in SAFSTOR in 2001 followed by decommissioning in 2012. In addition to my prefiled
9 testimony, I testified live before the Board on May 18, 2000.

10 Q8. What methodology did you use in your analysis to estimate the economic impacts of a
11 2013 shutdown as compared to continued operation of the VY Station until 2032?

12 A8. To measure the economic, demographic and fiscal impacts of the future operation and
13 eventual decommissioning of the VY Station, I used a dynamic, input-output model
14 developed by Regional Dynamics Inc. (to which I will refer in my testimony as “ReDyn
15 model”). The ReDyn model estimates the multi-regional impacts and year-by-year
16 (dynamic) nonlinear effects on industries, consumers and governments from changes in
17 company sales, jobs, wages or investments; changes in taxes or personal or government
18 spending; or public policy changes such as energy, environment, school, health or
19 security measures. The ReDyn model is explained in more detail in Appendix 1 to the
20 Economic Impact Report, Exhibit EN-RWH-1. For this report I developed a four-region
21 ReDyn model. The regions are: Windham County, Vermont; the remaining counties of
22 Vermont (called the “rest of Vermont”); Cheshire County, New Hampshire; and Franklin

1 County, Massachusetts. The rest of Vermont can expect to be impacted by VY Station
2 operations through purchasing and spending linkages, and thus this region was included
3 as a second region. Approximately 40% of Entergy VY employees reside in Vermont,
4 with the remainder in New Hampshire (mostly Cheshire County) and Massachusetts
5 (mostly Franklin County), hence, the inclusion of those two additional regions. While the
6 economic impacts on Cheshire and Franklin Counties are not directly addressed in the
7 Economic Impact Report, the counties were included in the analysis in order to fully
8 measure the impact of the VY Station and increase confidence in the reasonableness of
9 the ReDyn model's estimates.

10 Q9. You mentioned earlier that you considered the current economic condition of Vermont
11 and Windham County in your analysis. Could you summarize how these current
12 economic conditions factored into your analysis?

13 A9. Yes. As described in greater detail in Section II of the Economic Impact Report, I felt
14 that to understand the economic impact of the VY Station on state and local economies, it
15 was important to review and consider the recent performance of the economies of
16 Vermont and Windham County, including employment and income growth over the last
17 ten years. Based on a review of recent economic and demographic data, it is clear that
18 economic activity in Windham County has lagged that of the rest of Vermont. In
19 addition, while Vermont has experienced slow growth as compared to other states,
20 Windham County is an even slower-growing area. This suggests that any major, negative
21 economic impacts could be felt more acutely in Windham County than elsewhere in
22 Vermont.

1 Q10. Describe in greater detail the relative economic activity of Windham County as compared
2 to the state of Vermont.

3 A10. The Economic Impact Report compares economic activity between Windham County and
4 Vermont by looking at employment and unemployment information as well as wage and
5 income information. According to information published by the Vermont Department of
6 Labor (or "VDOL"), job growth in Windham County has lagged behind that of the state
7 as a whole in ten of the last eleven years, and in only two of those years did Windham
8 County post job gains. Thus, from 2000 to 2010, employers in the state lost 3,400 jobs
9 for a cumulative loss of 1.1%, while Windham County experienced a net loss of 2,200
10 jobs for a cumulative decline of 9.0%. Wage and income information also shows that
11 Windham County is lagging behind the rest of Vermont. Information published by the
12 VDOL indicates that the average wage per job in Windham County has grown by 34%
13 since 2000 (\$27,851 in 2000 to \$37,335 in 2010), while the average wage per job in all of
14 Vermont has grown 36% (\$28,925 in 2000 to \$39,425 in 2010). In addition, income
15 figures obtained from the Vermont Department of Taxes for the years 2000 to 2010
16 indicate that median family income in Windham County has grown 18% since 2000
17 (\$42,045 in 2000 to \$49,744 in 2010), while the rate of growth for median family income
18 for the state as a whole has been 25% (\$46,113 in 2000 to \$57,665 in 2010). It is notable
19 that median family income in Windham County was about \$8,000 (or 14%) less than the
20 statewide median. In addition, Windham County's median family income is the fourth
21 lowest of the fourteen counties in Vermont, trailing only the three Northeast Kingdom
22 counties.

1 Q11. Have you considered the demographics of Windham County as compared to the state as a
2 whole?

3 A11. Yes. Based on population data and estimates obtained from the U.S. Bureau of the
4 Census, it is apparent that while Vermont has experienced a small, 2.7% growth in total
5 population for the years 2000 to 2010 (609,618 in 2000 to 625,960 in 2010), Windham
6 County has experienced a 436-person, or 1.0% increase in total population during the
7 same period (44,112 in 2000 to 44,510 in 2010). Windham County's working-age
8 population growth has also trailed that of the state as a whole, and it is likely that
9 Windham County's workforce will soon begin to decline along with its population, as
10 explained in Section II.C of the Economic Impact Report. Declines in total population
11 and work-force availability in Windham County will likely result in a declining demand
12 in the regional market for goods and services as well as an increased difficulty for local
13 employers to find the labor needed to operate efficiently in Windham County.

14 Q12. Describe the importance of the VY Station in the economies of Windham County and
15 Vermont today.

16 A12. As I show in Section III of the Economic Impact Report, the VY Station is an important
17 contributor to the economies of Windham County and Vermont. At the end of 2011,
18 Entergy VY employed 623 people. In 2011, Entergy VY paid total compensation in
19 excess of \$65.7 million a year. As referenced in fn 1, above, due to a miscommunication
20 that was not discovered until shortly before this testimony was due to be filed, the
21 estimates in the remainder of this testimony assumed a payroll of about \$67.2 million.
22 The difference will not affect my ultimate conclusions concerning the economic benefits

1 of the continued operation of the VY Station although the numerical results of my
2 analysis will change.³ In addition, Entergy VY had four contract employees in 2011. The
3 importance of the VY Station in Windham County's economy is demonstrated by the fact
4 that the VY Station alone accounts for 2% of employment and 5% of the compensation
5 earned in the county. The VY Station's compensation per employee is higher than that of
6 any industry in the county. In addition, the VDOL reports that the VY Station is one of
7 the top-five single employers in Windham County. Based on our analysis, I estimate that
8 the total number of jobs created in Windham County in 2011 due to the operation of the
9 VY Station equals 1,053, of which 627 are Entergy VY employees plus contract
10 employees, and the remainder includes workers in retail trade, construction,
11 accommodations and food services, health care and social assistance and professional
12 services. Elsewhere in Vermont, an additional 246 jobs exist today due to the operation
13 of the VY Station in Windham County. Thus, a total of 1,299 jobs are created in
14 Vermont by the VY Station's 627 jobs (at the plant and through contractors).

15
16 I further estimate that the total payroll at all Vermont employers due to the operation of
17 the VY Station equals \$96.8 million, which is comprised of \$86.1 million in total payroll
18 for all Windham County employers and an additional \$10.7 million for employers in the
19 rest of Vermont. In addition, disposable income of all Vermont residents is \$55.8 million
20 higher than otherwise due to the operation of the VY Station; disposable income of

³ As noted, the corrected numerical results will be available July 13, 2012 for any party that requests them. Such a request will not prejudice the requesting party's discovery rights under the Board's May 4, 2012 order.

1 Windham County residents is \$40.2 million higher due to the operation of the VY
2 Station, and disposable income is \$15.6 million higher elsewhere in the state. Thus, the
3 operation of the VY Station today has a large and positive economic impact on Windham
4 County and the rest of Vermont.

5 Q13. What is the employment multiplier that can be calculated from your estimates?

6 A13. The total number of jobs created in Vermont equals 1,299 from the 627 jobs at the
7 Entergy VY. Dividing one by the other yields an employment multiplier of 2.07. This
8 means that for every existing job at Entergy VY, there is another job created elsewhere in
9 Vermont.

10 Q14. You have mentioned that a significant number of VY Station employees reside in New
11 Hampshire, Massachusetts or in Vermont counties other than Windham County. Does
12 your analysis take these employees into account in determining economic effects on
13 Vermont or Windham County?

14 A14. Yes. The ReDyn model estimates and takes into account the home residence of the
15 employees of the VY Station based on commuting trends by industry as reported in the
16 2010 U.S. Census.

17 Q15. Identify the continue-to-operate and shutdown scenarios you have considered in the
18 Economic Impact Report.

19 A15. Entergy VY asked us to consider the future economic impact of the VY Station under
20 three scenarios:

- 21 • a shutdown of the VY Station in 2013, followed by placement of the
22 station into safe storage or "SAFSTOR," with dismantlement activities
23 deferred, and storage of spent-nuclear fuel at the site until it is removed by
24 the U.S. Department of Entergy (or "DOE");

- a shutdown of the VY Station in 2032, followed by prompt decommissioning using the “DECON” method of decommissioning and storage of spent-nuclear fuel at the site until it is removed by DOE; and
- a shutdown of the VY Station in 2032, followed by placement of the VY Station into SAFSTOR with subsequent dismantlement and storage of spent-nuclear fuel at the site until it is removed by DOE.

Q16. How did you select the scenarios that you analyzed?

A16. Entergy VY specified the scenarios that I was asked to analyze.

Q17. Do you have an opinion about which of the 2032 scenarios that you analyzed is more likely to be followed by Entergy VY?

A17. No, although I note that the results are relatively similar under both 2032 scenarios. Both 2032 scenarios show substantial economic benefits for Windham County and the rest of the state of Vermont as compared to shutdown in 2013.

Q18. Describe in greater detail the scenarios you have considered that assume that the VY Station continues operations until 2032.

A18. As discussed in Sections IV and V of the Economic Impact Report, I assumed in these scenarios that the VY Station continues to operate as it does today until March 2032. In Section IV of the Economic Impact Report, I assumed that the plant would then be decommissioned over the period 2032 through 2042. This scenario further assumes that the spent-nuclear fuel would remain on site until 2083 (an assumption put forth by the Department in Docket No. 7082), when final pick-up of the spent fuel by the DOE would occur. Final site restoration would follow in 2083.⁴

⁴ Because the 2032 Deferred Decommissioning Scenario, described at Section V of the Economic Impact Report, continues through 2093, I estimate the economic impact of the 2032 Prompt Decommissioning Scenario also through 2093 to permit a year by year comparison of the two scenarios.

1 In Section V of the Economic Impact Report, I assumed that the plant enters SAFSTOR
2 in 2032 as described in the TLG Report. At the close of 2093, site restoration is complete
3 and no activity or structures associated with the VY Station remain. Under both of these
4 scenarios, I estimated economic activity by assuming that the current level of
5 employment and wages continues into the future at 2011 levels; that is, employment at
6 the power station continues at 623 with a payroll of \$67.2 million (in 2011 dollars)⁵.
7 Contract employment remains at four employees. Then, from 2032 through 2093 the
8 economic activity is measured by use of the annual expenditures presented in the TLG
9 Report.

10 Q19. What happens to the level of employment and wages in Windham County if the VY
11 Station continues to operate until March 2032?

12 A19. In general, employment in Windham County is forecasted to steadily, but slowly increase
13 after 2013. In 2032, however, the VY Station ceases operating as a power plant, and I
14 see an immediate, large decrease in employment in Windham County. This decrease is
15 moderated somewhat by the expenditures at that time for decommissioning the plant or
16 putting it in SAFSTOR, but not enough to prevent a significant decline. In the 2032
17 Prompt Decommissioning Scenario, from 2032 to 2037, when large expenditures would
18 be occurring, the employment decline is in the range of 800 to 900. The process
19 continues through 2040, with a declining need for employees in the later years.
20 In the 2032 Deferred Decommissioning Scenario, from 2032 to 2037, the employment
21 decline is in the range of 850 to 1150. The employment loss in Windham County after

⁵ See explanation at fn 2, above.

1 2037 will be in the range of 1,250 to 1,300 per year until 2086 when large expenditures
2 associated with the 2032 Deferred Decommissioning Scenario begin. From 2086 to
3 2093, the employment loss ranges from 625 to 1,100.

4
5 Total wages paid in Windham County are forecasted to track the employment numbers.
6 Total wages would, therefore, increase steadily through 2032, then fall with the closing of
7 the plant. Under the 2032 Prompt Decommissioning Scenario, from 2032 to 2037 the
8 decline in annual wages is approximately \$90 million. By 2040, the full impact of the
9 absence of the VY Station is apparent. The annual decline in wages is over \$100 million
10 from 2041 forward, and grows with general real wage inflation. Under the 2032 Deferred
11 Decommissioning Scenario, from 2032 to 2037 when large expenditures would be
12 occurring, the wage decline is in the range of \$95 to \$120 million. The wage loss in
13 Windham County after 2037 rises to \$125 million and grows with general wage inflation
14 until 2086. From 2086 to 2093 the wage loss decreases by \$5 million to \$50 million due
15 to increased activity at that time related to the dismantling of the plant.

16 Q20. Describe in greater detail the scenario you have considered that assumes a 2013
17 shutdown for the VY Station.

18 A20. As set forth in Section VI of the Economic Impact Report, the 2013 SAFSTOR Scenario
19 assumes that the VY Station ceases producing power in 2013. The plant would be placed
20 into SAFSTOR beginning in 2013 and maintained in that condition until 2066 when
21 dismantling activities would commence. Entergy VY asked us to consider a 2066 date
22 for decommissioning based on the assumption that the decommissioning-trust funds

1 continue to grow at a rate that would allow decommissioning to proceed in 2066.

2 Decommissioning would be complete in 2074 and spent fuel would be removed from the
3 site by the DOE by 2045, with site restoration being completed by 2074. As in the
4 previous scenario, the economic activity from 2012 through 2074 was measured by use of
5 the annual expenditures developed by TLG Services, Inc.

6 Q21. What happens to the level of employment and wages in Windham County if the VY
7 Station ceases operations in 2013?

8 A21. There is an initial loss of jobs in Windham County when the VY Station ceases
9 operations in 2013, offset somewhat by the jobs needed at the power station to put it into
10 SAFSTOR mode. From 2013 to 2018, employment in Windham County is 625 to 1,050
11 less than the baseline if the VY Station continues to operate, depending on the level of
12 spending with SAFSTOR. From 2019 through 2066, when the VY Station is in
13 SAFSTOR mode, the loss of jobs is about 1,150 to 1,350 below the baseline estimate.
14 From 2067 to 2074, the loss of jobs falls to 750 to 1,200 as the VY Station is
15 decommissioned. Then, from 2075 through 2083, the loss returns to about 1,350 below
16 the baseline. The impact on total wages would follow roughly the same path as
17 employment. When the VY Station ceases producing power in 2013, the total wages paid
18 by Windham County employers would drop off from the baseline estimate. The total
19 payroll decline is partially offset by the payroll associated with preparing the plant for
20 SAFSTOR mode, but not enough to prevent a decline. The decline from 2013 to 2018
21 averages \$83 million per year while the VY Station is being prepared for SAFSTOR
22 during this period. Payroll in the county from 2018 through 2066 ranges from \$98 to

1 \$172 million less. Payroll growth would pick up somewhat from 2066 through 2073 as
2 the decommissioning of the plant begins. Beginning in 2075, the payroll loss returns to
3 about \$190 million when all work associated with the 2013 SAFSTOR has ended.

4 Q22. Comparing the 2013 SAFSTOR Scenario with the two 2032 continued operation
5 scenarios you have considered, could you describe the employment, wage and
6 demographic impact that a 2013 shutdown would have on Windham County?

7 A22. Sections VII and VIII of the Economic Impact Report present our findings with respect to
8 the employment, wage and demographic impact that a 2013 shutdown would have on
9 Windham County as well as on the state of Vermont as a whole. In general, we conclude
10 that the shutdown of the VY Station in 2013 would have a significant, negative economic
11 impact on Windham County in terms of employment, wages and demographics as
12 compared to either of the continue-to-operate scenarios we have considered. The impacts
13 we identify begin in 2013 when the VY Station shuts down and power generation ceases.
14 Taking into account employment offsets that would result from SAFSTOR-related
15 activities, Windham County would nevertheless have, on average from 2013 to 2031,
16 1,088 fewer employees under the 2013 SAFSTOR Scenario than either of the scenarios
17 that assume the VY Station continues to operate until March 2032. The total wages paid
18 by Windham County employers would be significantly less in the 2013 shutdown
19 scenario than in the relicensing scenarios, with almost all the difference occurring during
20 the 2013 to 2031 time period. We estimate that the difference in wages paid under either
21 of the relicensing scenarios as compared to the shutdown scenario equals more than \$2.1
22 billion over the period 2013 to 2093. In present-value terms (and using a real interest rate

1 of 2.5% for discounting)⁶, the wage impact equals \$1.5 billion in 2011 dollars. As
2 explained in the Economic Impact Report, the significant differences between the two
3 scenarios occur from 2013 through about 2093, and thus we present our estimates for this
4 period. In addition to considering total-wage impact, we also considered the impact of a
5 shutdown on the after-tax disposable income of Windham County residents. Our analysis
6 indicates that over the period 2013 to 2093, the disposable income (in 2011 dollars)
7 earned by Windham County residents in either of the relicensing scenarios totals more
8 than \$1.6 billion more than in the 2013 SAFSTOR Scenario. In present-value terms, this
9 equals \$1.2 billion in the 2032 Prompt Shutdown Scenario and \$1.5 billion in the 2032
10 Deferred Shutdown Scenario. Finally, we considered the relative demographic impacts
11 on Windham County of a 2013 shutdown and placement of the plant into SAFSTOR
12 compared to a relicensing of the VY Station. In general, as compared to both the 2032
13 scenarios, we would expect to see a net population decline of 400 residents beginning in
14 2016. The loss decreases until there is basically no net population impact between the
15 continued operation and shutdown scenarios by 2042.

16 Q23. Would a 2013 shutdown result in a similar employment, wage and demographic impact
17 on the state of Vermont?

18 A23. While most of the impact of VY Station operations occurs within Windham County,
19 some impact spills over into Bennington, Windsor and other counties in the state (as well
20 as into New Hampshire and Massachusetts). Thus, there would be a spillover effect into
21 the rest of Vermont of the negative economic impacts associated with a VY Station

⁶ The "real interest rate" is the rate of interest received above the rate of inflation.

1 closure in 2013 (as compared to the continuing operation scenarios). Our analysis
2 indicates that employment in Vermont would be lower under the 2013 shutdown scenario
3 than the continued -operation scenarios. As compared to either of the 2032 scenarios, we
4 estimate that there would be about 260 fewer jobs in Vermont outside of Windham
5 County during the period 2013 to 2031. From 2068 to 2075, when considerable
6 expenditures occur with the 2013 shutdown scenario, there are 124 more jobs with the
7 2032 Prompt Decommissioning Scenario and 118 more than with the 2032 Deferred
8 Decommissioning Scenario. We further estimate that the total wages paid by employers
9 in the rest of Vermont would be \$393 million (\$313 million, present value) less over the
10 period of 2013 to 2093 in the 2013 shutdown scenario than in 2032 Prompt
11 Decommissioning Scenario and \$333 million less (\$210 million present value) over the
12 same period in the 2032 Deferred Decommissioning Scenario. At the same time,
13 disposable income earned by residents in the rest of Vermont would be \$393 million
14 (\$313 million, present value) less under the 2013 shutdown scenario than under the 2032
15 Prompt Decommissioning Scenario, and \$444 million (\$294 million, present value) less
16 under the 2032 Deferred Decommissioning Scenario.

17 Q24. Sections VII.G and VIII.G of the Economic Impact Report address the tax-revenue
18 impacts of a 2013 shutdown on State government in Vermont. Could you summarize the
19 results of your analysis and describe how they were derived?

20 A24. Yes. As we explain in the Economic Impact Report, State government revenues,
21 including revenues derived from individual income taxes, general sales taxes and most
22 other taxes, are negatively impacted by slow economic growth. In our analysis, we

1 utilized the ReDyn model to estimate the net reduction in State taxes due to the difference
2 in revenues received by State government under the relicensing scenarios versus the 2013
3 shutdown scenario. The tax revenues considered are the consequence of either the
4 operation of the VY Station or from the economic activity created through the multiplier
5 process. For example, income taxes are paid both by the VY Station employees and by
6 employees of other businesses in the state that exist because of the operation of the VY
7 Station in Vermont. Over the period 2013 through 2093, we estimate that the sum of all
8 taxes paid to the State of Vermont is \$227 million less under the 2013 SAFSTOR
9 Scenario than under the 2032 Prompt Decommissioning Scenario and \$253 million less
10 than under the 2032 Deferred Decommissioning Scenario, respectively. In present-value
11 terms, this difference equals \$121 million more for the 2032 Prompt Decommissioning
12 Scenario and \$119 million more for the 2032 Deferred Decommissioning Scenario. The
13 net loss for the four largest categories of tax in present value terms would be:

<u>TAX</u>	<u>2032 Shutdown</u>	<u>2032 SAFSTOR</u>
Individual income taxes	\$60.9 million;	\$67.9 million
Property taxes	\$58.3 million;	\$65.1 million
Selective sales taxes	\$53.0 million	\$59.1 million
General sales taxes	\$32.1 million	\$35.8 million

20 Q25. Would there be similar revenue impacts on local governments in Vermont?

21 A25. Yes. Just as the State would see a fall in tax revenues from the reduction of economic
22 activity, so would many local governments in Vermont, particularly in the area of

1 property-tax payments. We estimated the net loss of local tax revenues based on the
2 difference between local tax payments under the relicensing scenarios as compared to the
3 2013 shutdown scenario: The net loss over the period of 2013 to 2093 equals \$66.7 and
4 \$74.4 million (in 2011 dollars) under the 2032 Prompt Decommissioning and 2032
5 Deferred Decommissioning Scenarios, respectively. In present value terms, this
6 represents a \$48.9 million and \$48.1 million loss, respectively, in local tax revenues.

7 Q26. Summarize the results of your economic-impact analysis comparing a VY Station
8 shutdown in 2013 to continued operation to 2032.

9 A26. In the Economic Impact Report and in this testimony, we have estimated the impact that a
10 2013 closure of the VY Station would have on the economies of Windham County and
11 Vermont as compared to scenarios in which the VY Station would continue to operate for
12 an additional 20 years. From an economic perspective, it is absolutely clear that the VY
13 Station provides a good number of relatively high-paying jobs that result in significant
14 economic benefits for Windham County and the state of Vermont as a whole. If the VY
15 Station continues to operate until 2032, Windham County and Vermont will continue to
16 receive those benefits. If the VY Station ceases operations in 2013, however, the
17 economies of Windham County and the rest of Vermont will experience a substantial,
18 negative impact as explained in our Economic Impact Report and in this testimony.
19 While this loss (or gain) is significant standing on its own in a state such as Vermont, the
20 comparative impact of the loss of the VY Station raises a greater concern when
21 considered in the context of Windham County, a county that has experienced negative
22 growth in recent years and has consistently lagged behind Vermont as a whole in

1 economic terms. Thus, it is clear that the relicensing and continued operation of the VY
2 Station until 2032 will promote the general good of the state, as required by Section 231
3 of Vermont's Public Service Law, and will result in a substantial economic benefit to
4 Windham County as well as the state of Vermont and its residents.

5 Q27. Does this conclude your testimony?

6 A27. Yes, it does.